UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,691	05/04/2001	Alexander Tetelbaum	00-653	8190

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EXAMINER
HOGAN, MARY C

ART UNIT	PAPER NUMBER
2123	

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

    A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *5/4/01*.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 May 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
        application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

1.   This application has been examined.

2.   **Claims 1-14** have been examined and rejected.

Drawings

3.   The drawings are objected to because of the following. **Figure 1** should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

35 USC § 101

4.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

5.   **Claims 1-14** are rejected under 35 U.S.C. 101 because the claimed invention is not supported by an asserted or well established utility and is not tangible.

6.   An invention, which is eligible for patenting under 35 U.S.C.101, is in the useful arts when it is a machine, manufacture, process or composition of matter, which produces a concrete, tangible, and useful result. The fundamental test for patent eligibility is thus to determine whether the claimed invention produces a ***useful, concrete and tangible result.*** The test for practical application as applied by the examiner involves the determination of the following factors:

> (1) Useful- The Supreme Court in *Diamond v. Diehr* requires that the examiner look at the claimed invention as a whole and compare any asserted utility with the claimed invention to determine whether the asserted utility is accomplished. Applying utility case law the examiner will note that:

>> (a) the utility need not be expressly recited in the claims, rather it may be inferred.

>> (b) if the utility is not asserted in the written description, then it must be well established.

(2) Tangible - Applying *In re Warmerdam*, 33 F.3d 1354, 31 USPQ2d 1754 (Fed. Cir. 1994), the examiner will determine whether there is simply a mathematical construct claimed, such as a disembodied data structure and method of making it. If so, the claim involves no more than a manipulation of an abstract idea and therefore, is nonstatutory under 35 U.S.C. 101. In *Warmerdam* the abstract idea of a data structure became capable of producing a useful result when it was fixed in a tangible medium which enabled its functionality to be realized.

(3) Concrete- Another consideration is whether the invention produces a concrete result. Usually, this question arises when a result cannot be assured. An appropriate rejection under 35 U.S.C. 101 should be accompanied by a lack of enablement rejection, because the invention cannot operate as intended without undue experimentation.

7.   Furthermore, although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

8.   **Claims 1-14** are rejected under 35 U.S.C.101 because they appear to be reciting a mathematical algorithm, therefore nor producing a concrete, useful and tangible result.

Claim Rejections - 35 USC § 102

9.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

10.   **Claims 1-14** are rejected under 35 U.S.C. 102(a) as being anticipated by Lou et al (Lou et al, "Estimating Routing Congestion Using Probabilistic Analysis", Proceedings of the 2001 International Symposium on Physical Design, pages 112 – 117, April 1-4, 2001), herein referred to as **Lou**.

11.   As to **Claim 1, Lou** teaches: a method of calculating a probability that a wire path in a predetermined direction will be contained in a given area within a datapath, said method comprising:

dividing the datapath into pre-determined areas to define said given area **(Figure 1)**;

calculating the mathematical expectations of full segments in the pre-determined direction for said given area in said datapath **(section II.2.1)**;

calculating the mathematical expectations of partial segments in the pre-determined direction for said given area in said datapath (section II.2.1);

summing the mathematical expectations which have been calculated to determine the probability that a wire path in the pre-determined direction will be contained in the given area within the datapath (section II.2.1, section II.2.3, Definition 5).

12.   As to **Claim 2, Lou** teaches: a method as recited in claim 1, further comprising calculating the probability for each connection in the datapath (section II.2.3, Definition 5).

13.   As to **Claim 3, Lou** teaches: a method as recited in claim 2, further comprising summing the probabilities to calculate the whole mathematical expectation of segments in the predetermined direction in the given area for all the connections in the datapath (Definition 5, Theorem 3 and cases a-e).

14.   As to **Claim 4, Lou** teaches: a method as recited in claim 1, further comprising calculating the mathematical expectations of full horizontal segments for said given area in said datapath (section II.2.1, Definition 5, Theorem 3, case a-e).

15.   As to **Claim 5, Lou** teaches: a method as recited in claim 1, further comprising calculating the mathematical expectations of partial horizontal segments for said given area in said datapath (section II.2.1, Definition 5, Theorem 3, case a-e).

16.   As to **Claim 6, Lou** teaches: a method as recited in claim 1, further comprising calculating the mathematical expectations of full horizontal segments for said given area in said datapath, and calculating the mathematical expectations of partial horizontal segments for said given area in said datapath (section II.2.1, Definition 5, Theorem 3, case a-e).

17.   As to **Claim 7, Lou** teaches: a method as recited in claim 6, further comprising summing the mathematical expectations which have been calculated to determine the probability that a wire path in the horizontal direction will be contained in the given area within the datapath (section II.2.1, Definition 5, Theorem 3, case a-e).

18.   As to **Claim 8, Lou** teaches: a method as recited in claim 1, further comprising calculating the mathematical expectations of full vertical segments for said given area in said datapath (section II.2.1, Definition 5, Theorem 3, case a-e).

19.   As to **Claim 9, Lou** teaches: a method as recited in claim 1, further comprising calculating the mathematical expectations of partial vertical segments for said given area in said datapath (section II.2.1, Definition 5, Theorem 3, case a-e).

20.   As to **Claim 10, Lou** teaches: a method as recited in claim 1, further comprising calculating the mathematical expectations of full vertical segments for said given area in said datapath, and calculating

the mathematical expectations of partial vertical segments for said given area in said datapath **(section II.2.1, Definition 5, Theorem 3, case a-e)**.

21.   As to **Claim 11, Lou** teaches: a method as recited in claim 10, further comprising summing the mathematical expectations which have been calculated to determine the probability that a wire path in the vertical direction will be contained in the given area within the datapath **(section II.2.1, Definition 5, Theorem 3, case a-e)**.

22.   As to **Claim 12, Lou** teaches: a method as recited in claim 1, further comprising calculating the mathematical expectations of full horizontal segments for said given area in said datapath and calculating the mathematical expectations of full vertical segments for said given area in said datapath **(section II.2.1, Definition 5, Theorem 3, case a-e)**.

23.   As to **Claim 13, Lou** teaches: a method as recited in claim 12, further comprising calculating the mathematical expectations of partial horizontal segments for said given area in said datapath and calculating the mathematical expectations of partial vertical segments for said given area in said datapath **(section II.2.1, Definition 5, Theorem 3, case a-e)**.

24.   As to **Claim 14, Lou** teaches: a method as recited in claim 1, further comprising calculating the mathematical expectations of full horizontal segments for said given area in said datapath, calculating the mathematical expectations of partial horizontal segments for said given area in said datapath, summing the mathematical expectations relating to horizontal segments which have been calculated to determine the probability that a wire path in the horizontal direction will be contained in the given area within the datapath, calculating the mathematical expectations of full vertical segments for said given area in said datapath, calculating the mathematical expectations of partial vertical segments for said given area in said datapath, and summing the mathematical expectations relating to vertical segments which have been calculated to determine the probability that a wire path in the vertical direction will be contained in the given area within the datapath **(section II.2.1, Definition 5, Theorem 3, case a-e)**.
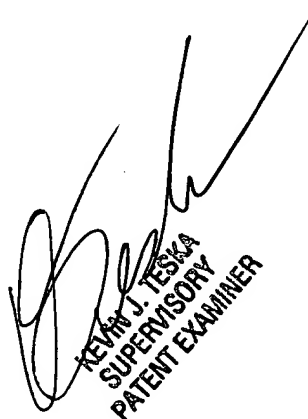
Conclusion

25.   The prior art made of record, see PTO 892, and not relied upon is considered pertinent to applicant's disclosure, careful consideration must be given prior to Applicant's response to this Office Action.

26.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mary C Hogan whose telephone number is 571-272-3712. The examiner can normally be reached on 7:30AM-5PM Monday-Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska can be reached on 571-272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Mary C Hogan
Examiner
Art Unit 2123